

REMARKS

By the present Amendment, claim 15 is amended. This leaves claims 15-28 pending in the application, with claim 15 being independent.

Applicants make of record the telephone interviews conducted with Examiner Rojas on October 24 and 26, 2006 with the undersigned. During the interviews the above amendment to claim 15 and the following comments relative to claim 15 and the Letzel patent were discussed. The Examiner stated that (1) the original claim 15 was not limited to a magnetic locking force despite the recitation in the last paragraph of claim 15 of “a locking force...caused by the magnetic field”, and did not distinguish the Letzel patent, even though the Letzel patent only uses its electromagnet to release its mechanical lock and not for locking , as contended by applicants during the interview, and (2) the above amendment to claim 15 would not be entered after final rejection on the ground that it raised new issues requiring further searching, despite the prior and interview arguments by applicants that the additional recitation was inherent in the original claim 15 wording.

Rejections under 35 U.S.C. § 102 and § 103

Claim 15, as amended, covers a locking system 1 for a safety switch to monitor a protective device 47-48 on a machine 50 comprising a read head 2 and an actuator 3. The read head 2 has a first component set 10 with electric structural components, and is coupled to one of a protective device 47-48 and a machine 50. The actuator 3 has a second component set 14 with electric structural components, and is mounted on the other of the protective device and the machine. The first and second components 10 and 14 interact without electrical contact to control the safety switch. A switchable electromagnet 7 is mounted on one of the head and the

actuator, and generates a magnetic field. A counterelement 12 is mounted on the other of the read head and the actuator, and is operable with the electromagnet to lock the actuator on the head by the magnetic attraction of the magnetic field of the electromagnet. A sensor element 31-33 controls a locking force on the actuator and the read head caused by the magnetic field, and has an output signal being a function of the magnetic field generated by the electromagnet.

By forming the locking system in this manner, the locking forces are produced by the magnetic attraction, and are effectively controlled to ensure complete locking by the magnetic forces of the device prior to operation of the machine.

Claims 15-17, 20, 21, 26 and 27 stand rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 6,539,760 to Letzel. The Letzel patent is cited for disclosing a locking system (Fig. 7) having a read head 5 and an actuator 6 with electric structural components interacting without electrical contact to control a safety switch (column 4, lines 5-15). A switchable electromagnet 22 is allegedly mounted on the read head and generates a magnetic field. A counterelement 18 is allegedly mounted on the actuator and is operable with the electromagnet to lock the actuator on the read head. A sensor element 33 allegedly controls the actuator locking force and the read head, and has an output signal being a function of the magnetic field generated by the electromagnet.

Claim 15 is patentably distinguishable over the Letzel patent since the Letzel patent does not have a counterelement mounted on the other of the read head and actuator (as opposed to the one with the switchable electromagnet) to lock the actuator on the read head with the electromagnet. Additionally, the Letzel patent is patentably distinguishable by failing to have the

claimed sensor element controlling the locking force and having an output signal being a function of the magnetic field generated by the electromagnet.

The Letzel discloses a monitoring device having a housing 2 with a receiving space 3. An actuator 6 moves within the receiving space between the locking position of Fig. 7 and the unlocking position of Fig. 8. The read head 5 reads the release mechanism 12, with the read head being in the housing 5 and the release mechanism 12 being on actuator 6. A locking bar 20 is pivotably mounted for movement between the locking and unlocking positions. The locking bar is actuated to the locking position of Fig. 7 when electromagnet 22 is de-energized and armature 23 is pushed by spring 24 to move locking bar 20 through a linkage mechanism 25-29 against the bias of spring 21 to lock the actuator by the engagement of locking bar 20 with hook-like extension 18 of actuator 6. When the electromagnet is energized, armature 23 is retracted to allow the locking bar to move to the unlocking position of Fig. 8 under the bias of spring 21 (column 3, line 50 to column 4, line 4). Thus, the locking between the housing 2 and the actuator 6 is by means of a mechanical locking between locking bar 20 and hook-like extension 18 actuated by spring 24, not the magnetic attraction of electromagnet 22.

In contrast, claim 15 requires that the counterelement be operable with the electromagnet to lock the actuator by the magnetic attraction. In this manner, the locking of the claim 15 subject matter is by the magnetic interaction between the electromagnet and the counterelement, not a spring operated mechanical connection, as in the Letzel patent.

Since the Letzel actuator 6 is merely provided with a hook-like extension 18, as disclosed in column 3, lines 50-53 of the Letzel patent, the hook-like extension 18 does not provide a counterelement mounted on the other of the read head and actuator and operable with the

electromagnet to lock the actuator on the read head, as recited in claim 15. The hook-like extension 18 of the Letzel patent interacts with the locking bar 20 and not with the electromagnet, as recited in claim 15.

Relative to the claimed sensor element, the Letzel mating element 33 is cited. Such element is a reed contact or Hall-effect sensor which can be actuated by the permanent magnet forming release element 32 on locking bar 20, as disclosed in column 4, lines 30-36. This mating element indicates to the evaluation device the closed or open state of the locking bar. In merely indicating the state of the locking bar, the Letzel mating element only operates with permanent magnet 32 (not electromagnet 22), does not control the locking force of the actuator and the head caused by the magnetic field, and does not have an output signal being a function of the magnetic field generated by the electromagnet, as recited in the last paragraph of claim 15.

Accordingly, claim 15 is not anticipated or rendered obvious by the Letzel patent.

Claims 16, 17, 19-21, 26 and 27 being dependent upon claim 15, are also allowable for the above reasons. Moreover, these claims recite additional features further distinguishing them over the cited patents. Specifically, the sensor element generating an analog signal of claim 16, the justability of the locking force of claim 17, the mounting of the sensor element on the actuator of claim 19, the mounting of the sensor element on the head element of claim 20, the switching states and their control of claim 21, the adjusting means of claim 25, the read switch of claim 26 and the Hall element of claim 27 are not anticipated or rendered obvious by the cited patents, particularly within the overall claim combination.

Relative to the claim 16 feature, the Letzel release element 32 (a permanent magnet) and mating element 33 are noted. However, such elements merely denote an open state or a closed

state and do not provide the claimed analog signal being a function of the intensity of the magnetic field generated by the electromagnet. Nothing in the Letzel patent discloses that the field of the electromagnet operates mating element 33.

Claim 17 is further distinguished by the magnet locking force being adjustable. Nothing in the alternative embodiment referred to in column 4, lines 41-49 involves the adjustment of locking force magnitudes, particularly with the use of an electromagnet. This portion of the Letzel patent describes a release via the electromagnet, not the adjustment of the locking force.

Relative to claim 19, nothing in the evidence of record supports the conclusionary position that it would be obvious to mount the sensor on the actuator, as claimed.

Claim 20 is further distinguished by the sensor being on the read head. As noted above, mating element 33 does not form the claimed sensor.

Relative to claim 21, nothing provides that the Letzel release mechanism 12 relied upon as a second component is controlled by the switching states of the sensor element. In the Letzel device, the operation of the mating element 33 does not effect or control the release mechanism 12 such that the subject matter of claim 21 is not anticipated by the Letzel patent.

Relative to claim 25, the Roth patent is cited for having a sensor 24 which is allegedly adjustably mounted. However, the Roth patent relates to an electromagnet door lock, while the Letzel patent relates to a monitoring device. In view of the substantial differences between these two systems, it would not be obvious to combine these two patents in the manner proposed in the rejection. Specifically, there is no motivation to add any Roth adjustment means to the Letzel patent, particularly relative to the mating element 33 and particularly in view of the non-analogous nature of same.

Claims 26 and 27 are further distinguished particularly within the overall claimed combination.

Since the subject matter of claims 18, 22, 23, 24 and 28 are indicated as being patentable, the record will not be burdened with further comments thereon.

In view of the foregoing, claims 15-28 are allowable. Prompt and favorable action is solicited.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Mark S. Bicks", written in a cursive style.

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